

*CSSD*

# ***CENTRAL STERILE SUPPLY DEPARTMENT***



وزارة الصحة  
Ministry of Health

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# THE CENTRAL STERILIZATION & SUPPLY DEPARTMENT (CSSD)

## ■ Mission of CSSD

- ☐ Timely delivery of sterile goods
- ☐ Quality
- ☐ Efficiency (line process)

## ■ Activities of the CSSD

- ☐ Cleaning
- ☐ Disinfection of semi- / non critical items
- ☐ Sterilization of critical items (high risk for infection)
- ☐ Supply of sterile materials

# DEFINITION



Service, with in the hospital, catering for the sterile supplies to all departments , both to specialized units as well as general wards and OPDs.



# EXPOSURE TO CHEMICALS



## Slips, Trips, and Falls

CSSD employees are exposed to slippery floors due to steam and washing processes.

Keep floors clean and dry to avoid slips. Wet surfaces enhance the growth of molds, fungi, and

bacteria, which can cause infections.

Keep aisles and passageways clear and properly maintained with no unnecessary obstruction

that can create hazards. Provide sufficient and accessible floor or ceiling electrical outlets for equipment to avoid trips due to crisscrossing power cords.

# BLOOD BORNE PATHOGEN

## Bloodborne Pathogens

CSSD employees are potentially exposed to blood borne pathogens and other infectious materials such as bloody, contaminated surgical instruments and sharps (e.g., needles, scalpels). Employees must safely discard disposable sharp items and reprocess reusable instruments/equipment.



**Centralizing the activities of receipt, cleaning, assembly, sterilization, storage and distribution of sterilized materials from a central department where safe sterilization is done under controlled conditions with adequate managerial and technical supervision at an optimum cost.**

**To provide an efficient, economic, continuous and quality supply of sterilized material to various areas of the hospital to deliver quality and infection free patient care.**

**Contributes to reduction in hospital infection rate**

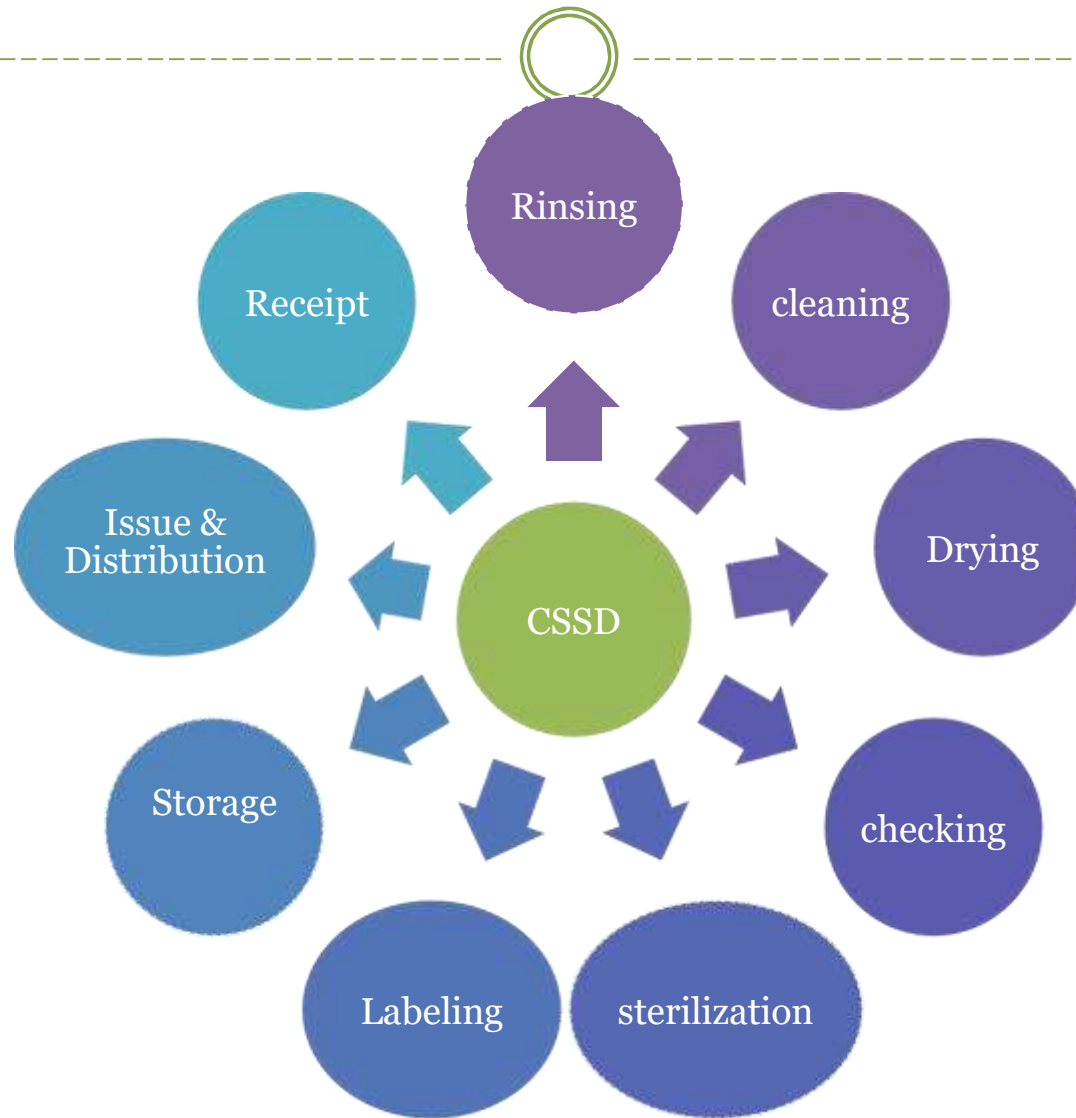
**To reduce the burden of work of the nursing personnel, there by enabling them to devote more of their time to patient care .**



# FUNCTIONS & ACTIVITY



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# **FUNCTIONS OF CSSD**



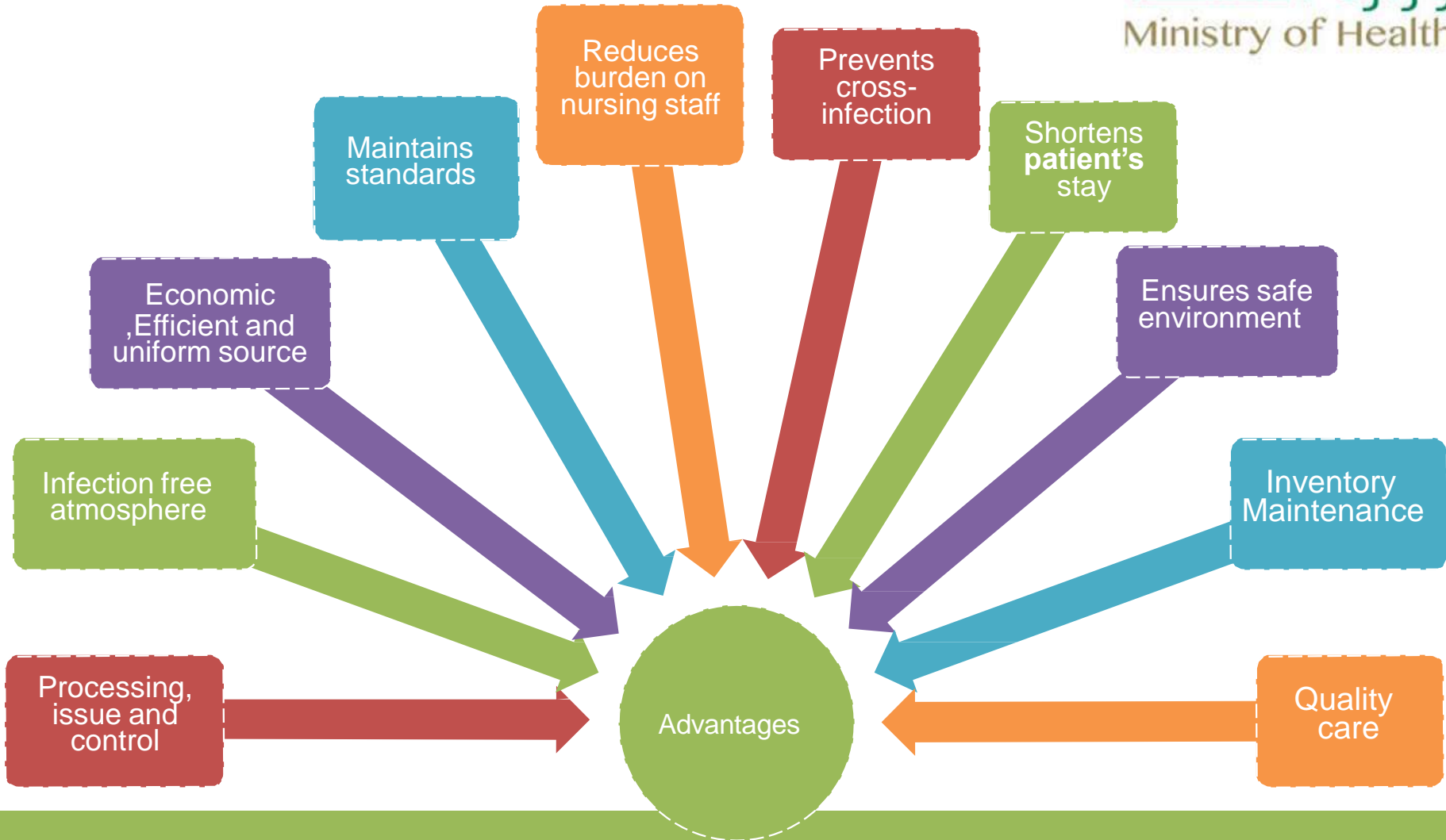
- **Receiving and sorting soiled materials used in the hospital.**
- **Determining whether the item should be reused or discarded.**
- **Carry out the process of decontamination or disinfection prior to sterilization.**
- **Carry out specialized cleaning of equipments and supplies.**
- **Inspecting and testing instruments, equipments and linen.**
- **Assembling treatments trays, instrument sets, linen packs, etc.**
- **Packing all materials for sterilization.**
- **Sterilizing.**
- **Labeling and dating materials.**
- **Storing and controlling inventory.**
- **Issuing and distributing.**



# ADVANTAGES



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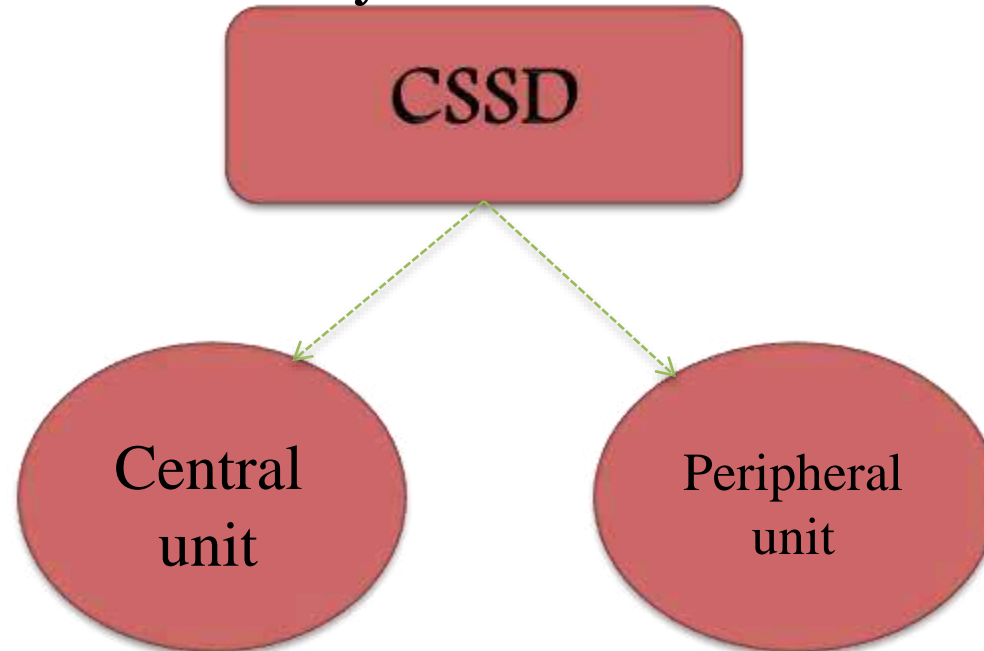
# ADVANTAGES



1. Bacteriological safe sterilization.
2. Less expensive.
3. Elimination of unsound practices & establishment of standard procedures.
4. Assurance of adequate supply of sterile products immediately and constantly available for sometime as well as emergency use.
5. Conservation of trained staff.
6. Better quality control
7. Better good of material flow
8. Prolonged life by proper care of equipment

# PLANNING OF CSSD DEPT

The CSSD can broadly be classified into two parts



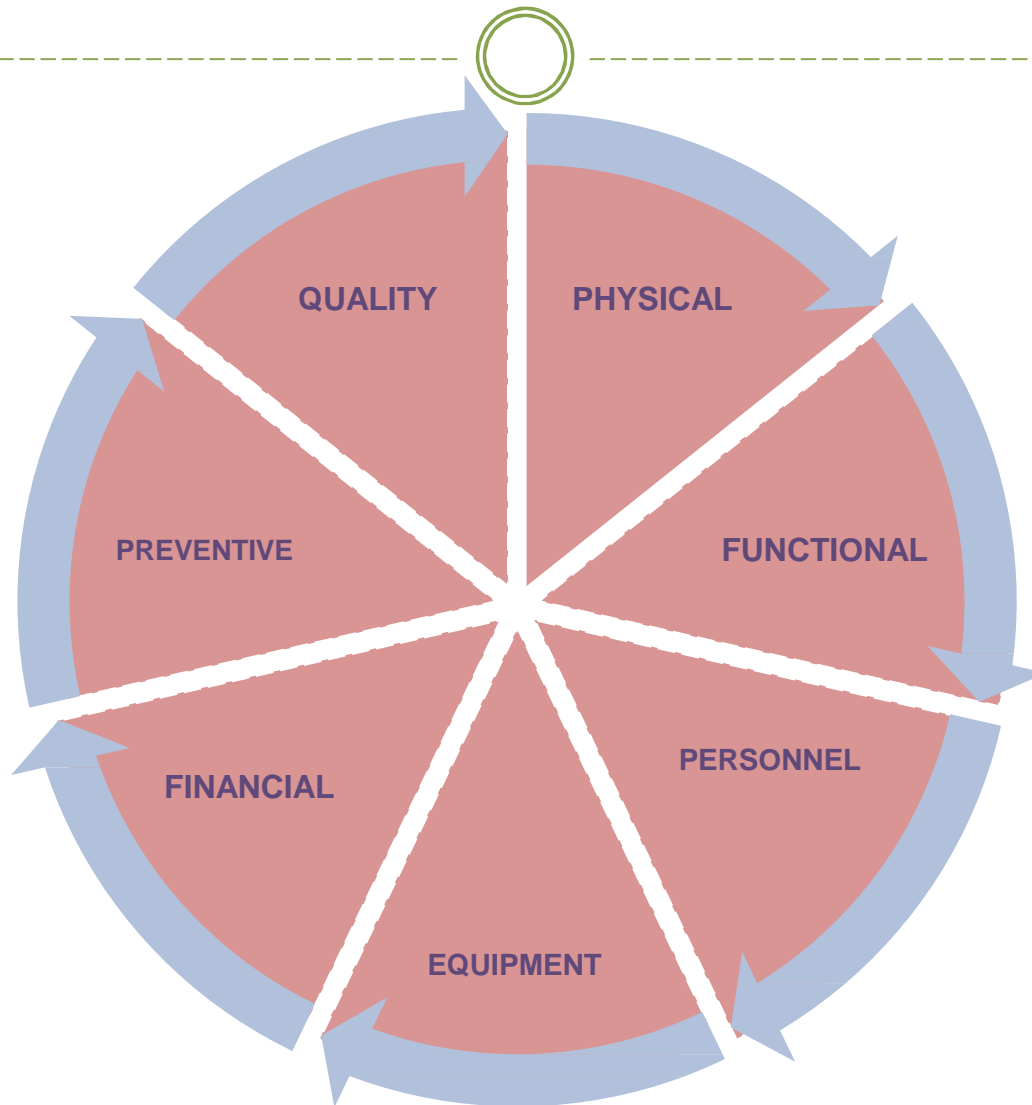
- Responsible for receiving dirty Utilities cleaning, processing, Sterilization, storage and supply

- Mainly responsible for distribution to various areas of hospital.
- TSSU (Theater Sterile Supply Unit)

# PLANNING OF CSSD DEPT



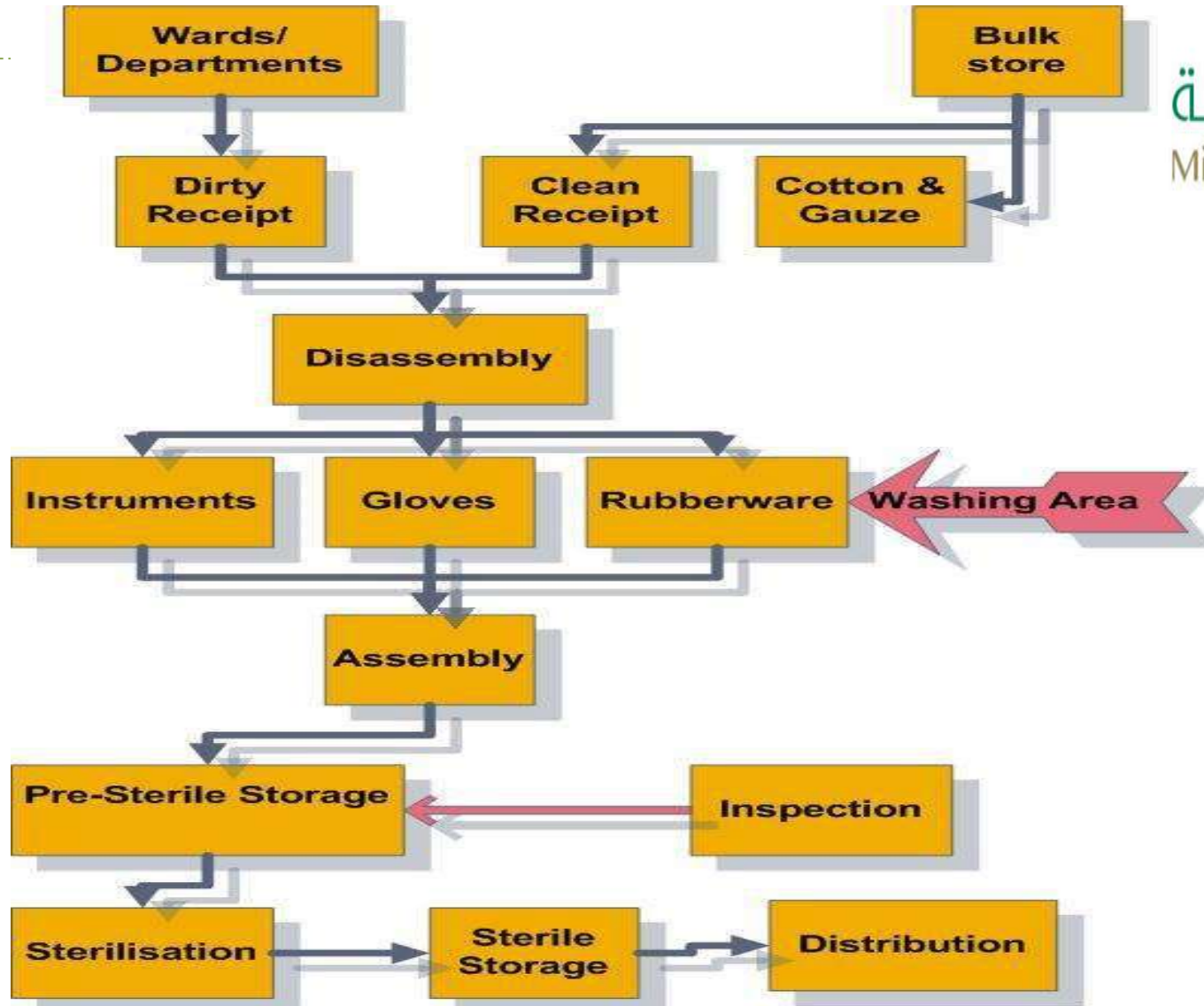
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# FLOW PROCESS



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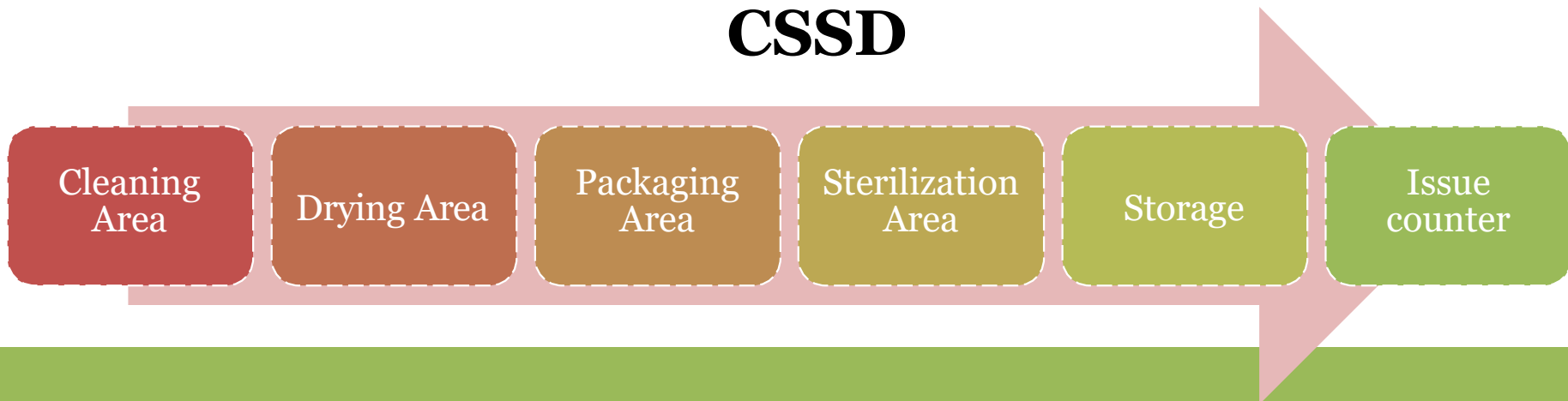


# LAYOUT DESIGNING PRINCIPLE



- There is no back tracking of sterile goods.
- One way movement from receiving counter to issue counter.
- Sterile area should be prior to sterile storage and issue.
- The receiving counter must be away from the issue counter.
- Separate receiving and issuing counter

**There should minimum six basic division in CSSD**





# CENTRAL STERILIZATION DESIGN AND LAY OUT



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# STERILIZATION



- It is a process of freeing an article from all living organisms including bacteria ,fungal spores and viruses.
- A material is pronounced sterile if it achieves 99.99% kill of bacterial spores.

# TYPES OF STERILIZATION



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- Dry Heat
- Steam High Pressure-Autoclaves operated by Gas, K.oil or Electricity (Flash, Pulse)
- Ethylene Oxide Sterilization.
- Chemical Sterilization.
- Radiation Sterilization.
- Infra Red Radiation – Syringes
- Ultra Violet Radiation – Decontamination of Air
- Ionizing Radiation / Gamma Radiation

# CHEMICAL STERILIZATION



- A Glutaraldehyde derivative is most effective as it destroys spores too.
- It is **high level disinfectant**. It kills spores within 12 hrs and viruses within 10 min.
- Widely used because of their excellent biocidal properties, activity in the presence of organic matter, non corrosiveness and noncoagulation of proteinaceous material

## Hydrogen peroxide

- It is an effective bactericidal, fungicidal, viricidal and sporicidal.
  - It is commercially available as 3% solution but can be used upto 25% concentration.
  - It is non corrosive and not inactivated by organic matter but irritant to skin and eyes
- lutaraldehyde derivative is most effective as it destroys spores too.

# STEAM STERILATION



The equipments are first cleaned & the packaged in muslin, linen or paper which are easily penetrated by steam & then placed on shelf in the chamber.

Water → Saturated → Wet vapor → Dry saturated Vapor → Super Heated Vapor / Steam

- Steam with  $<0.95$  Dryness Factor is not useful for Sterilization.
- Superheated Steam acts like Dry Hot Air only . ( Strength Of Steam is its Latent Heat)

## **Total time Required**

- ❑ Autoclave – 45 to 50 min
- ❑ ETO(Ethylene Oxide) sterilizer – 11 to 12 hours

# STERILIZATION INDICATORS

## ***Mechanical Monitors:***

- ❑ Devices that record time, temperature & pressure.



## ***Biological Indicators:***

- ❑ They are standardized preparation of spores.
  - ❑ A positive biological indicator is indicative of possible sterilization process failure.
  - ❑ They should be used at least once a week but
  - ❑ Time needed for incubation is long.
- E.g. spores of *Bacillus Sterothermophilus*.





# STERILIZATION INDICATORS

## ***Chemical Indicators:***

- ❑ These are more practical means & detect problems immediately.
- ❑ The CDC & all major U.S organizations standards & guidelines advocate that a chemical indicator be attached to every package that goes through a sterilization cycle & within each package to be sterilized in what is expected to be the most difficult-to-sterilize location.

**These are divided into 6 classes, higher the class, more sensitive the indicator**

Class 1-

These are Internal & External Process Indicator

These inform that item has been exposed to sterilization process.

E.g. External Process Indicator – Autoclave Tape.



# STERILIZATION INDICATORS

## Class 2

- ❑ E.g. Bowie-Dick test for vacuum steam sterilizer.
- ❑ They only assess Vacuum Pump efficiency & detect the presence of air leaks &/or gases in steam.



## Class 3

- ❑ E.g. Temperature Tube.
- ❑ Contains chemicals that melts & sometimes changes color when the appropriate temp is attained.

## Class 4

- ❑ Respond to one or more sterilization parameters.
- ❑ Contains Ink that changes color when exposed to correct combination of sterilization parameters.

# STERILIZATION INDICATORS

## Class 5

- ❑ Known as Integrating Indicators or Integrators
- ❑ Respond to all parameters of sterilization over a specified range of temperatures.

## Class 6

- ❑ These are emulating indicators.
- ❑ These are designed to react to all critical parameters over a specified range of sterilization cycles for which the stated values are based on the settings of the selected sterilization cycles



# STORAGE



- After sterilization the sterilized items are kept in different racks as per labeling.
- Supplied as per the demand of different area.
- To ensure continuous availability of sterile supply five times of daily requirement should be available in storage.

# ROLE OF MANAGER



- Maintenance and repair of equipment
- Inventory management of supplies and consumable
- Ensure quality of sterilization
- Ensure proper distribution and transport
- Cost control measure, to analyze and reduce the number of cycle
- Record keeping and data analysis
- Optimal utilization of manpower and equipment
- Motivation of staff and training
- Inter departmental coordination



# EXPOSURE TO CHEMICALS

appropriate personal protective equipment (PPE) such as gloves, goggles, and gown when handling hazardous cleaning detergents and chemicals.

Where the eyes or body of any person may be exposed to corrosive materials, medical services and first aid should be readily provided. Suitable facilities for quick drenching or flushing of the eyes and body should be available within the work area for immediate emergency use.





# EXPOSURE TO CHEMICALS

## BURNS:

CSSD employees are exposed to possible burns or cuts that can occur from handling or sorting

**hot/ Cuts sterilized items** or sharp instruments when removing those from steam liners. Possible solutions to avoid these risks .

from autoclaves/sterilizers or from

Establish work practices that will prevent hazards such as:

- Do not remove items from sterilizers until cooled.

- Avoid handling sharp ends of instruments.

- Use forceps or other devices to remove sharp instruments from baskets and autoclave.

- Use appropriate PPE, especially, hand protection gears such as oven mitts to protect the hands

- when handling hot items, and steel mesh or Kevlar gloves when handling or sorting sharp

- instruments.

# HANDLING EXPIRED SUPPLIES

- Labeling all medical supplies with the date of the earliest expiration date.
- All expired supplies must be labeled “Expired — Do Not Use” and stored separately from non- expired materials if immediate disposal is not possible.
- Expired supplies must be disposed of after the expiration date, and dispose of the outdated items and supplies appropriately.
- A sterile packaged item is considered expired and non-sterile depending on:  
Time Related System:
  - The expiration date for double package has been exceeded one year.
  - The expiration date for single package has been exceeded six months
- Event Related System that depend on sterility preserved unless integrity broken.
  - The sterile pack considered expired if the pack has been opened or damaged..
  - The integrity of plastic, paper or cloth wrappers is damaged soiled or water marked.

# RECALL OF STERILIZED ITEMS



- When there is evidence of a sterilization failure the Infection Control Department should be notified to follow-up if any of the suspect medical devices were used on patients and consult with the physicians that came in contact with the suspect medical devices.
- Notify your sterilizer service representative for assistance in determining the sterilization failure. The combined results of mechanical, chemical and biological monitoring should determine the success of any changes made or become obvious if the sterilizer continues to malfunction

# RECALL OF STERILIZED ITEMS

**Once** the cause has been noted, arrange to have the unit serviced or repaired. After the corrections have been made, a vacuum steam sterilizer must be re-validated with three consecutive negative biological monitors in three consecutive cycles, followed by three consecutive dynamic air removal tests. **Each** type of cycle (gravity and pre-vacuum) must be tested and all test results negative before the sterilizer is put back into use. The unit is not to be used until the results of these tests are acceptable. Once the sterilizer is determined to be functioning properly it can be put back into routine use. It is important to keep records. **This** includes the time/date of the cycle, sterilizer identification, packaging materials, location of the BI, results of the test and the control, and the name of the person conducting and reading the test.





A photograph featuring two smooth, light-colored river stones on a coarse, grey gravel surface. A single white daisy with a bright yellow center is placed on the left stone. The right stone has the words "Thank you" inscribed on it in a dark, elegant cursive script.

*Thank  
you*